hanalei

MOON + TIDE CALENDAR

2017

PAPAHĀNAUMOKUĀKEA
Marine National Monument

HAWAIIAN ISLANDS HUMPBACK WHALE
NATIONAL MARINE SANCTUARY

HanaleiWatershedHui

WAIPĀ

Aloha mai!

This calendar was developed through a partnership between the Hanalei community, the Hanalei Watershed Hui, Papahānaumokuākea Marine National Monument, the Hawaiian Islands Humpback Whale National Marine Sanctuary, the Department of Land and Natural Resources Division of Aquatic Resources, and the Waipā Foundation.

Traditional Hawaiian knowledge about fish spawning was based on lunar cycles and seasonal changes. Observations provided in this calendar can be used to better care for our reef fish population in Hanalei.

Hanalei Tides

The tides presented in this calendar are the subordinate tide predictions for Hanalei Bay. These predictions are based on harmonic data from Nāwiliwili Bay.

Hawaiian Moon Phases

Many calendars are based on the synodic month, a 29.53 day average orbital period of the moon. In this calendar, the moon phase of Hilo was aligned with the astronomical new moon as determined by the U.S. Naval Observatory. The moon phase of Muku was combined with the Mauli phase where appropriate.

FISHING SEASON TABLE

	ʻĀholehole	Manini	ʻŌmilu	ʻŌpelu	Akule	Halalū	Moi	Ula	Ula Papapa	Kona Crab	ʻAmaʻama
JANUARY	!	–	–	–	–	–	!	–	–	–	✕
FEBRUARY	!	–	–	–	–	–	!	–	–	–	✕
MARCH	!	!	–	–	–	–	!	–	–	–	✕
APRIL	!	!	!	!	!	–	!	–	–	–	–
MAY	–	!	!	!	!	–	!	✕	✕	✕	–
JUNE	–	!	!	!	!	–	✕	✕	✕	✕	–
JULY	–	–	–	!	!	–	✕	✕	✕	✕	–
AUGUST	–	–	–	!	!	!	✕	✕	✕	✕	–
SEPTEMBER	–	–	–	–	!	!	!	–	–	–	–
OCTOBER	–	–	–	–	!	!	!	–	–	–	–
NOVEMBER	–	–	–	–	–	–	!	–	–	–	–
DECEMBER	–	–	–	–	–	–	!	–	–	–	✕

TERMS USED IN THIS CALENDAR

! LIMITED HARVEST

Some species have limited harvest periods, restrictions on harvest method (type of gear), bag limits, and/or minimum sizes.

- Halalū harvesting is limited August to October.
- Moi harvesting is limited September to February.

! SUGGESTED LIMITED HARVEST

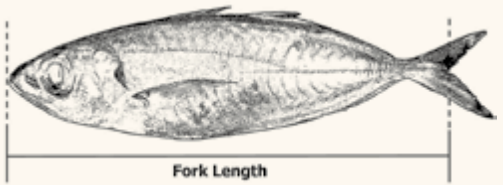
The species listed under suggested limited harvest (**SLH**) in this calendar are meant to inform fishers when peak spawning may be occurring in Hanalei. These periods are based on observations and gonad data collected in Hanalei. SLH is not a part of Hawai'i fishing regulations. Annual variations are likely to occur, so harvest carefully.

✕ CLOSED SEASON

These periods of complete harvest restriction are based on current fishing regulations administered by the State of Hawai'i through the Department of Land and Natural Resources, Division of Aquatic Resources.

A complete list of the regulations can be found at: dlnr.hawaii.gov/dar/fishing/fishing-regulations

During a closed season for a given species, there is a ban on harvesting, possessing, or selling that species.



FORK LENGTH: Measured from fish's snout to base of "V" in tail fin. State regulated species are measured in this way.

GONAD: Reproductive organ, male or female.

L50: Length at which 50 percent of a species population is reproductively mature.

Suggested Limited Harvest

Suggested limited harvest (**SLH**) is not a part of Hawai‘i fishing regulations. The species listed under SLH in this calendar are meant to inform fishers when peak spawning may be occurring in Hanalei. This means that harvesting should be minimized or completely avoided to allow fish to reproduce undisturbed. Although data on manini and ‘āholehole spawning was collected in Hanalei, slight variations on peak spawning activity is likely to occur from year to year, so be observant. Spawning may also vary significantly at other locations around Kaua‘i.

The traditional practice of seasonally restricting the harvest of a specific fishery in Hawai‘i was carefully maintained through keen observation. By learning how to better care for our reef fish stocks, communities can help to restore balance by limiting harvests during periods of stock replenishment. Modern fishing tools are very efficient at harvesting fish, so we need to be extra careful when using them.

If you’re interested in learning how you can help to contribute information to this project, contact the Hanalei Watershed Hui at:

808-826-1985
hanaleiriver@hawaiian.net

JANUARY	‘Āholehole	Manini	‘Ōmilu	‘Ōpelu	Akule	Halalū	Moi	Ula	Ula Papapa	Kona Crab	‘Ama‘ama
	!	–	–	–	–	–	!	–	–	–	✕

For more info see the full **FISHING SEASON TABLE** near the start of the calendar

LIMITED HARVEST
15/day 11 in. minimum fork length

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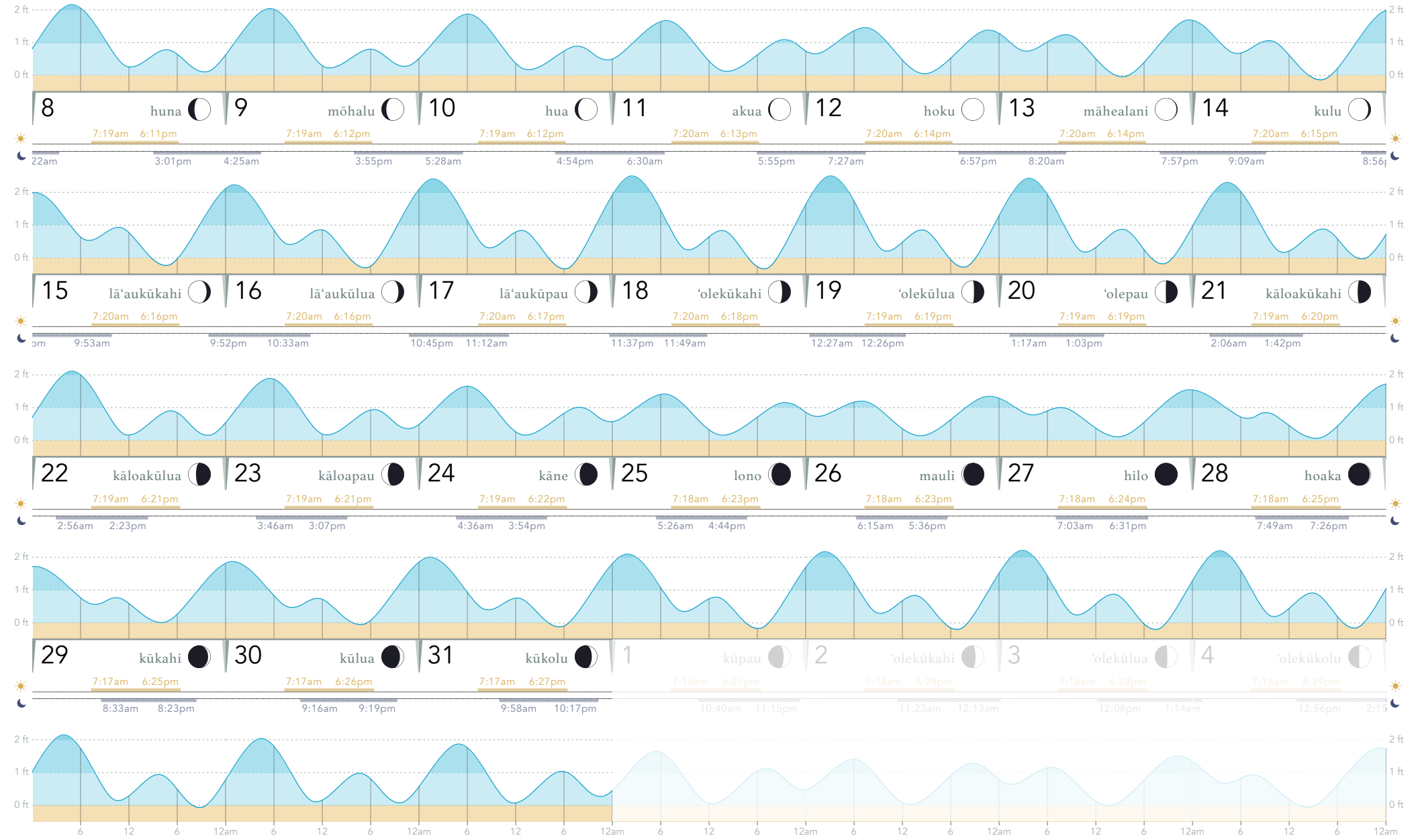
JANUARY

lāpule SUNDAY	pōʻakahi MONDAY	pōʻalua TUESDAY	pōʻakolu WEDNESDAY	pōʻahā THURSDAY	pōʻalima FRIDAY	pōʻaono SATURDAY
1 kūkolu	2 kūkolu	3 kūpau	4 ʻolekūkahi	5 ʻolekūlua	6 ʻolekūkolu	7 ʻolepau
7:18am 6:06pm	7:18am 6:07pm	7:18am 6:08pm	7:18am 6:08pm	7:19am 6:09pm	7:19am 6:10pm	7:19am 6:10pm
9:51am 9:33pm	10:34am 10:28pm	11:16am 11:24pm	11:57am 12:21am	12:39pm 1:20am	1:23pm 2:20am	2:10pm 3:…
8 huna	9 mōhalu	10 hua	11 akua	12 hoku	13 māhealani	14 kulu
7:19am 6:11pm	7:19am 6:12pm	7:19am 6:12pm	7:20am 6:13pm	7:20am 6:14pm	7:20am 6:14pm	7:20am 6:15pm
…22am 3:01pm	4:25am 3:55pm	5:28am 4:54pm	6:30am 5:55pm	7:27am 6:57pm	8:20am 7:57pm	9:09am 8:56…
15 lāʻaukūkahi	16 lāʻaukūlua	17 lāʻaukūpau	18 ʻolekūkahi	19 ʻolekūlua	20 ʻolepau	21 kāloakūkahi
7:20am 6:16pm	7:20am 6:16pm	7:20am 6:17pm	7:20am 6:18pm	7:19am 6:19pm	7:19am 6:19pm	7:19am 6:20pm
…m 9:53am	9:52pm 10:33am	10:45pm 11:12am	11:37pm 11:49am	12:27am 12:26pm	1:17am 1:03pm	2:06am 1:42pm
22 kāloakūlua	23 kāloapau	24 kāne	25 lono	26 mauli	27 hilo	28 hoaka
7:19am 6:21pm	7:19am 6:21pm	7:19am 6:22pm	7:18am 6:23pm	7:18am 6:23pm	7:18am 6:24pm	7:18am 6:25pm
2:56am 2:23pm	3:46am 3:07pm	4:36am 3:54pm	5:26am 4:44pm	6:15am 5:36pm	7:03am 6:31pm	7:49am 7:26pm
29 kūkahi	30 kūlua	31 kūkolu	1 kūpau	2 ʻolekūkahi	3 ʻolekūlua	4 ʻolekūkolu
7:17am 6:25pm	7:17am 6:26pm	7:17am 6:27pm	7:16am 6:27pm	7:16am 6:28pm	7:16am 6:28pm	7:15am 6:29pm
8:33am 8:23pm	9:16am 9:19pm	9:58am 10:17pm	10:40am 11:15pm	11:23am 12:13am	12:08pm 1:14am	12:56pm 2:15…



Halele'a is Kaua'i's Sanctuary for Humpback Whales

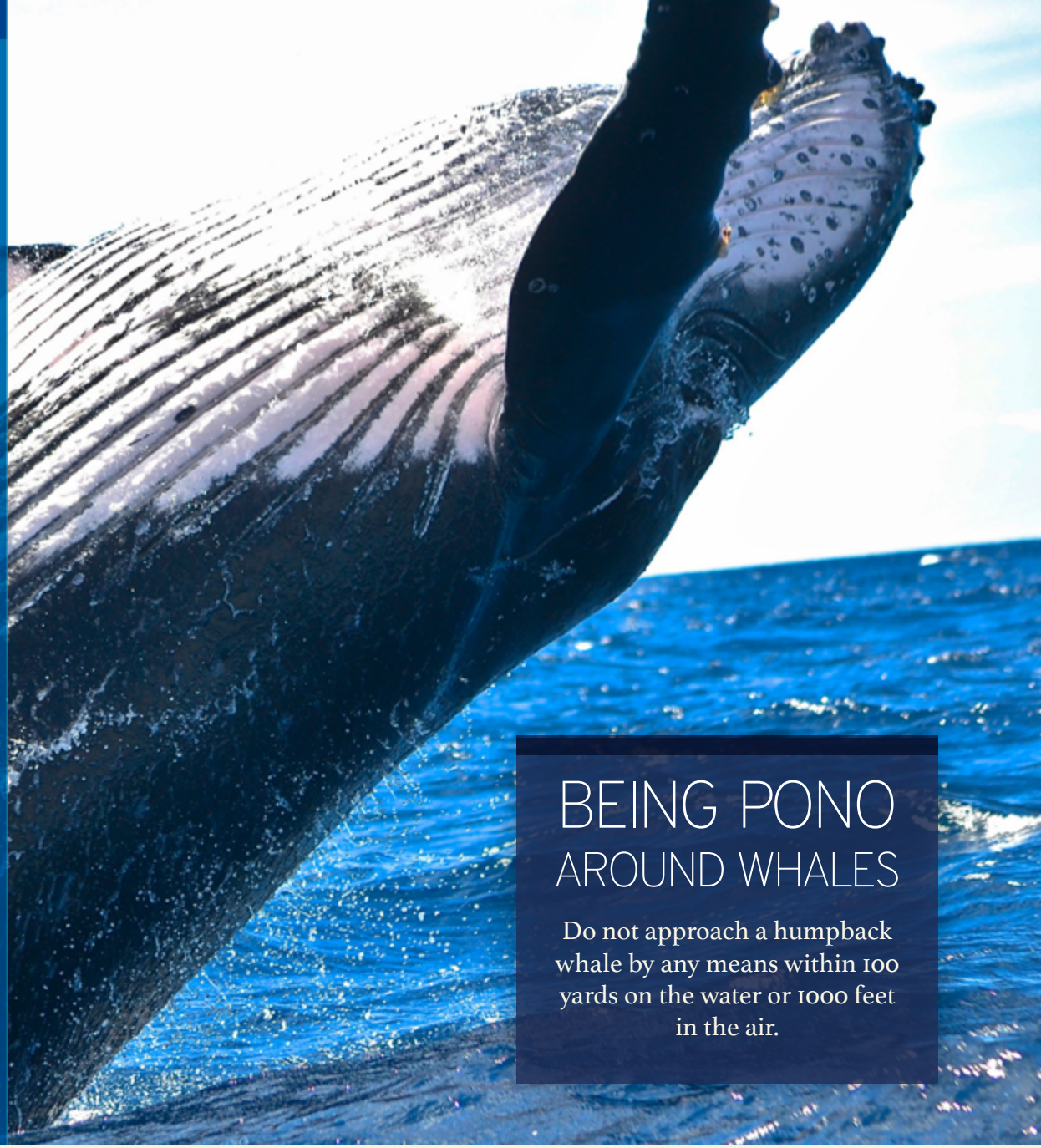
Humpback whales can be frequently seen in Hawai'i, especially during the peak season months of January, February, and March. They have migrated from northern feeding grounds to their primary breeding and calving ground around the Hawaiian Islands. Over 10,000 humpback whales make up a population in which a majority will make the annual journey to Hawai'i—one of the greatest seasonal aggregations of humpback whales on Earth.

Common behaviors include: the blow (15-foot high forceful exhalation), traveling (multiple surfacings with dorsal fin exposed), pec slap (pectoral fin slapping the ocean surface), and breach (jumping out of the water). Humpback whales are the acrobats of the whale world.

Occasionally, a humpback whale may be sighted within Hanalei Bay. These are normally juvenile whales or mothers with their calves seeking shallow water, or possibly exploring. Humpback whales are also very curious animals, but due to their large size and regulations should not be approached closely. Respect and enjoy these magnificent animals known as *koholā*, but at the same time, maintain a safe and legal distance.

For more information about humpback whales in Hawai'i, visit:

HawaiiHumpbackWhale.noaa.gov



BEING PONO AROUND WHALES

Do not approach a humpback whale by any means within 100 yards on the water or 1000 feet in the air.

FEBRUARY	ʻĀholehole	Manini	ʻŌmilu	ʻŌpelu	Akule	Halalū	Moi	Ula	Ula Papapa	Kona Crab	ʻAmaʻama
For more info see the full **FISHING SEASON TABLE** near the start of the calendar	!	–	–	–	–	–	!	–	–	–	✕

LIMITED HARVEST
15/day 11 in. minimum fork length

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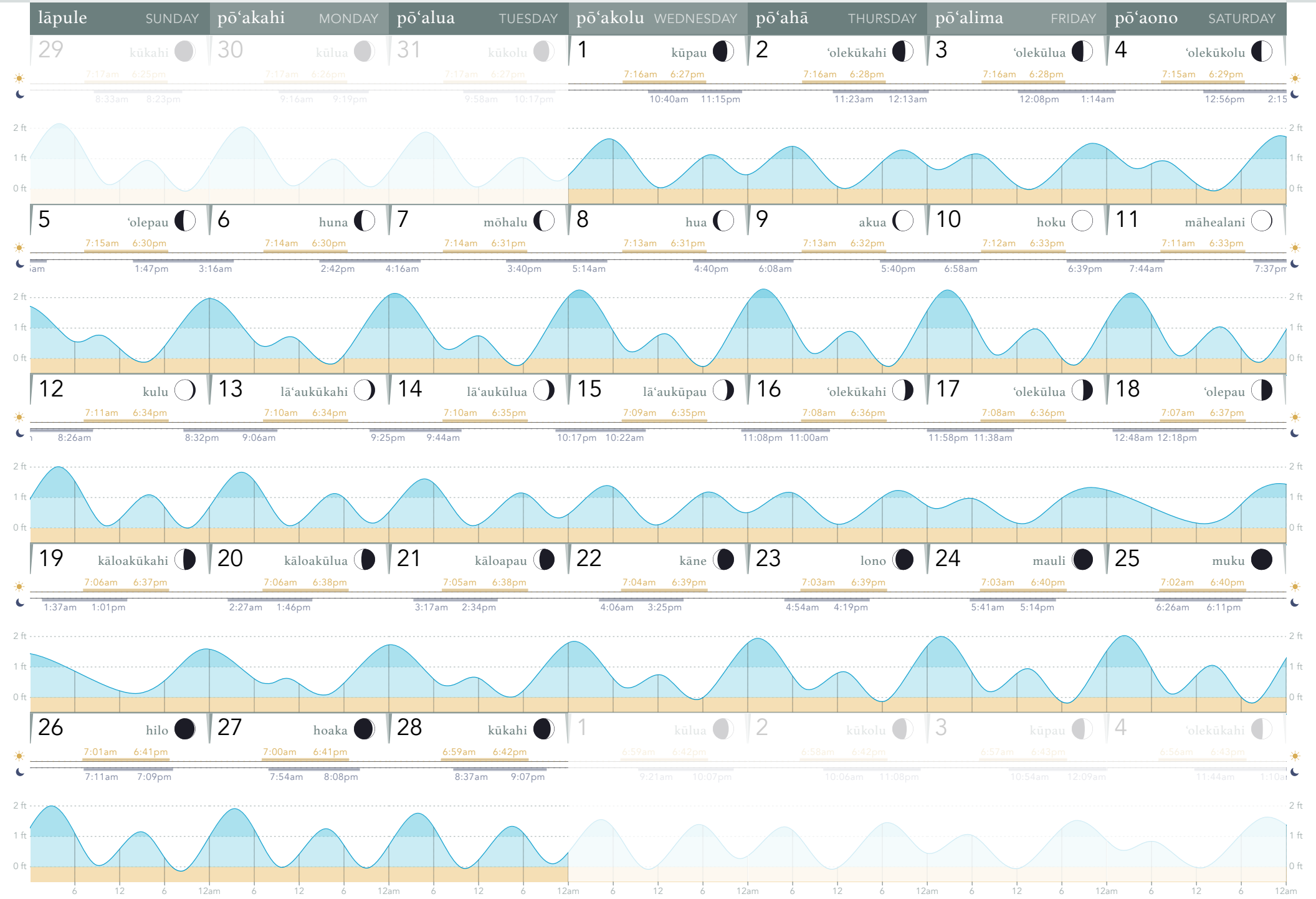
FEBRUARY



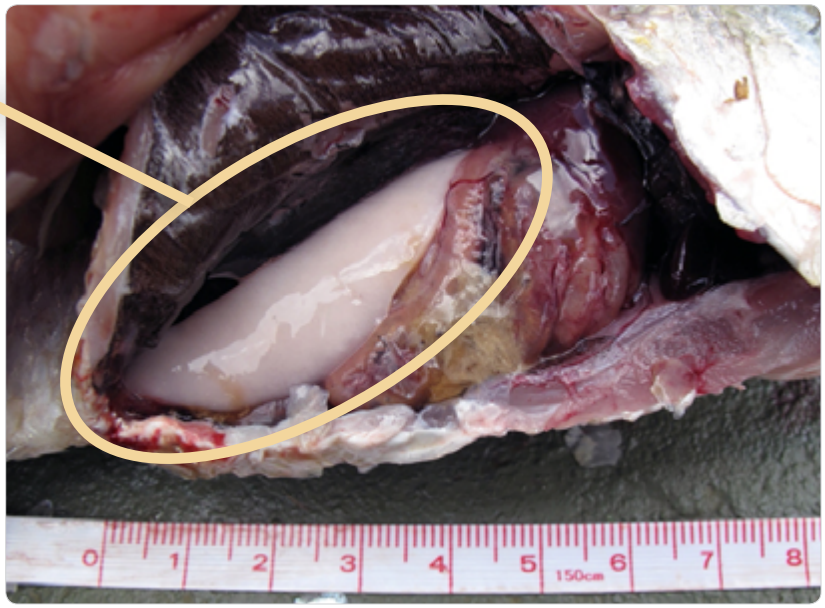
Fish Gonad Identification

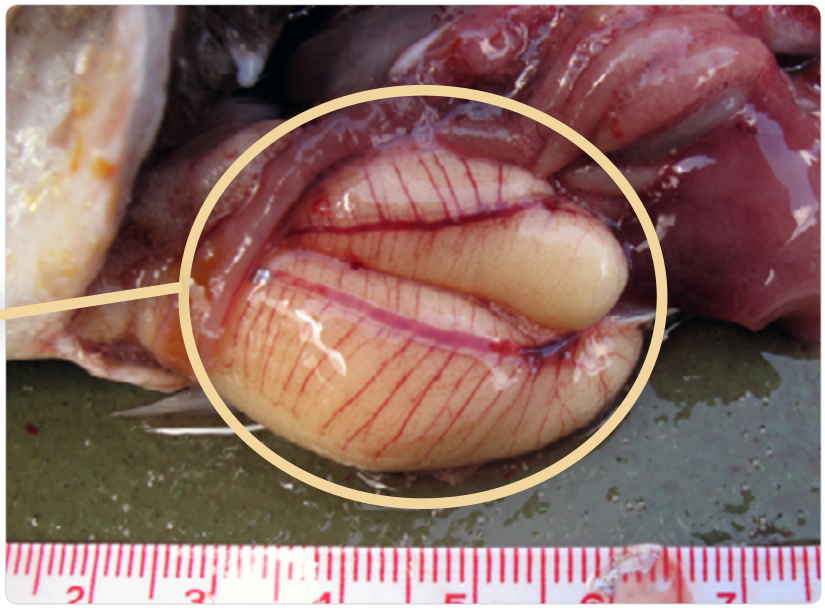
FISHING PONO

By learning how to identify the reproductive organs in fish, you can track spawning seasons in your area.

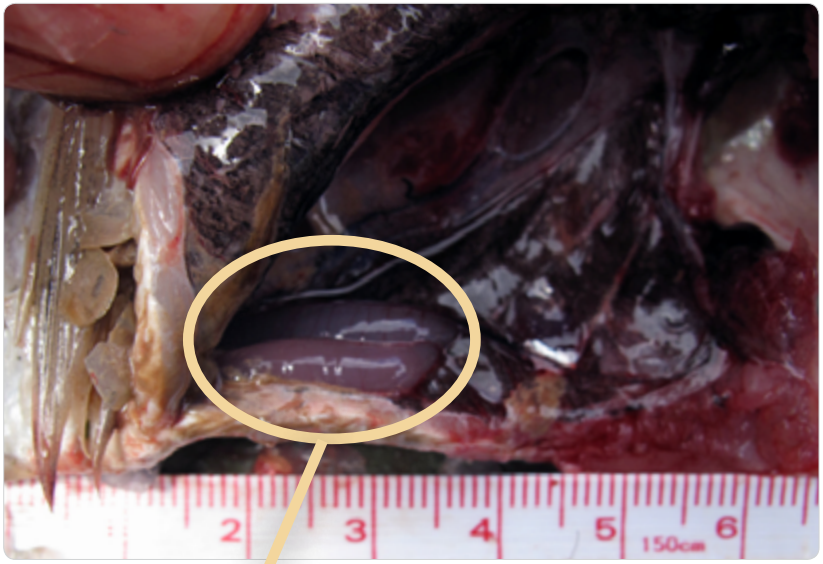
When cleaning your catch look for developed gonads. This can indicate spawning, and harvesting should be limited.

MALE REPRODUCTIVE ORGANS are also important to identify as they indicate spawning when developed.





DEVELOPED EGGS are yellowish in color with large blood vessels clearly visible.



UNDER-DEVELOPED EGGS mean fish are most likely not reproducing—this is a good time to harvest. Remember when these seasons occur in your area as each species will spawn at nearly the same time each year.

MARCH	ʻĀholehole	Manini	ʻŌmilu	ʻŌpelu	Akule	Halalū	Moi	Ula	Ula Papapa	Kona Crab	ʻAmaʻama
	!	!	–	–	–	–	!	–	–	–	✕

For more info see the full **FISHING SEASON TABLE** near the start of the calendar

LIMITED HARVEST
15/day 11 in. minimum fork length

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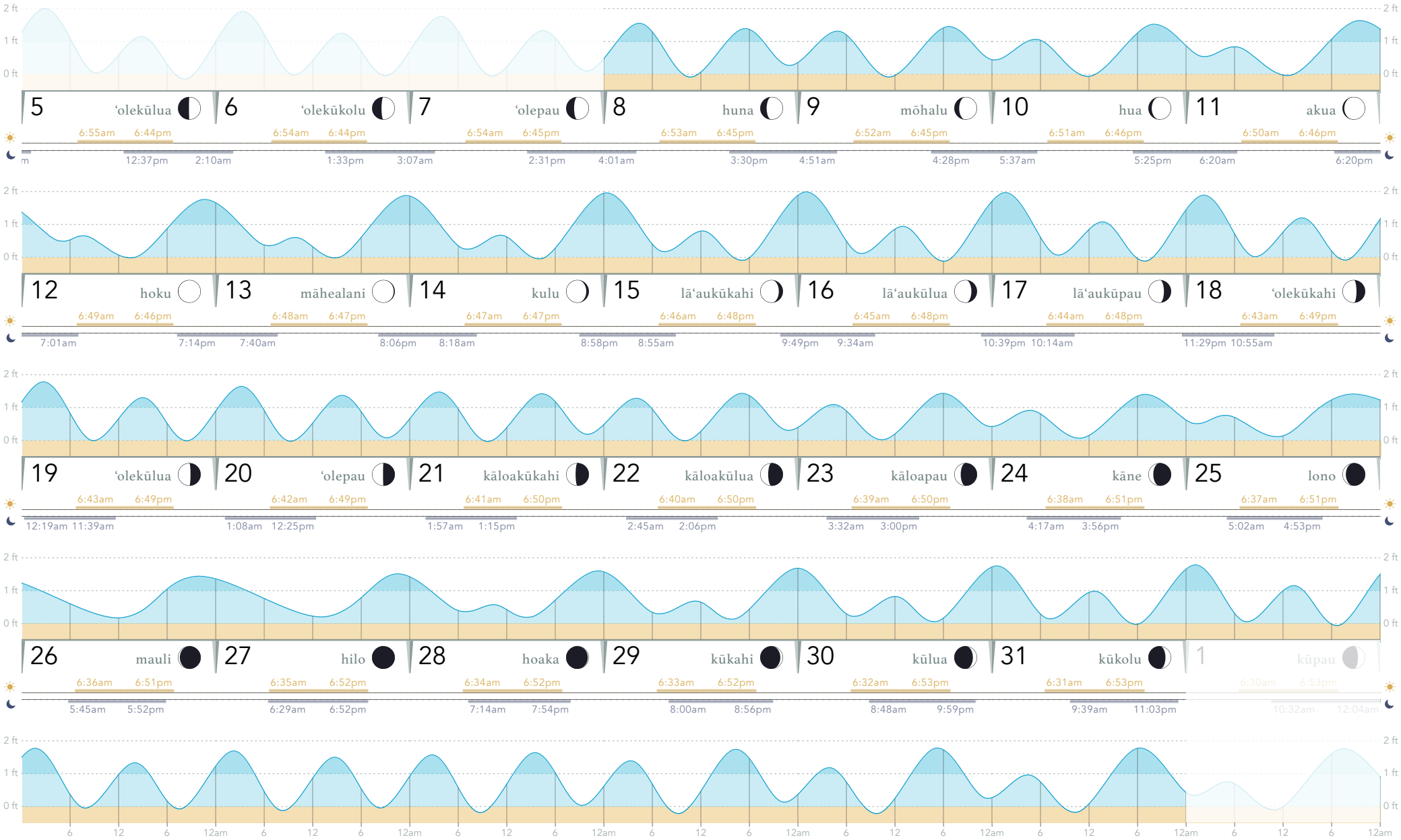
2017

MARCH

lāpule SUNDAY	pōʻakahi MONDAY	pōʻalua TUESDAY	pōʻakolu WEDNESDAY	pōʻahā THURSDAY	pōʻalima FRIDAY	pōʻaono SATURDAY
26 hilo	27 hoaka	28 kūkahi	1 kūlua	2 kūkolu	3 kūpau	4 ʻolekūkahi
7:01am 6:41pm 7:11am 7:09pm	7:00am 6:41pm 7:54am 8:08pm	6:59am 6:42pm 8:37am 9:07pm	6:59am 6:42pm 9:21am 10:07pm	6:58am 6:42pm 10:06am 11:08pm	6:57am 6:43pm 10:54am 12:09am	6:56am 6:43pm 11:44am 1:10a
5 ʻolekūlua	6 ʻolekūkolu	7 ʻolepau	8 huna	9 mōhalu	10 hua	11 akua
6:55am 6:44pm m 12:37pm 2:10am	6:54am 6:44pm 1:33pm 3:07am	6:54am 6:45pm 2:31pm 4:01am	6:53am 6:45pm 3:30pm 4:51am	6:52am 6:45pm 4:28pm 5:37am	6:51am 6:46pm 5:25pm 6:20am	6:50am 6:46pm 6:20pm
12 hoku	13 māhealani	14 kulu	15 lāʻaukūkahi	16 lāʻaukūlua	17 lāʻaukūpau	18 ʻolekūkahi
6:49am 6:46pm 7:01am	6:48am 6:47pm 7:14pm 7:40am	6:47am 6:47pm 8:06pm 8:18am	6:46am 6:48pm 8:58pm 8:55am	6:45am 6:48pm 9:49pm 9:34am	6:44am 6:48pm 10:39pm 10:14am	6:43am 6:49pm 11:29pm 10:55am
19 ʻolekūlua	20 ʻolepau	21 kāloakūkahi	22 kāloakūlua	23 kāloapau	24 kāne	25 lono
6:43am 6:49pm 12:19am 11:39am	6:42am 6:49pm 1:08am 12:25pm	6:41am 6:50pm 1:57am 1:15pm	6:40am 6:50pm 2:45am 2:06pm	6:39am 6:50pm 3:32am 3:00pm	6:38am 6:51pm 4:17am 3:56pm	6:37am 6:51pm 5:02am 4:53pm
26 mauli	27 hilo	28 hoaka	29 kūkahi	30 kūlua	31 kūkolu	1 kūpau
6:36am 6:51pm 5:45am 5:52pm	6:35am 6:52pm 6:29am 6:52pm	6:34am 6:52pm 7:14am 7:54pm	6:33am 6:52pm 8:00am 8:56pm	6:32am 6:53pm 8:48am 9:59pm	6:31am 6:53pm 9:39am 11:03pm	6:30am 6:53pm 10:32am 12:04am



HARVEST PONO

Harvesting only medium-sized ʻōʻio can help to maintain a healthy population in your area. Round jaw ʻōʻio begin to reproduce at approximately 19 inches and sharp jaw ʻōʻio at 14 inches.

Sharp jaw ʻōʻio (PHOTO CREDIT: BJ Pang)

ʻŌʻio: Round Jaw vs. Sharp Jaw

Although many of us have seen ʻōʻio before, many people don't realize there are two species in Hawaiʻi. They can be hard to distinguish, but here are the main features that set them apart:

Albula virgata, aka sharp jaw ʻōʻio, have a pointed jaw compared to *Albula glossodonta*, aka round jaw ʻōʻio. They also have a yellow spot at the base of their pectoral fins, a feature not found on round jaw ʻōʻio.

Both species are reported to reach the same size, approximately 27 inches, and feed on crustaceans over reef flats and in sandy areas.

Round jaw ʻōʻio can be found throughout the Indo-Pacific region, while the sharp jaw is only found in Hawaiʻi.

APRIL	ʻĀholehole	Manini	ʻŌmilu	ʻŌpelu	Akule	Halalū	Moi	Ula	Ula Papapa	Kona Crab	ʻAmaʻama
For more info see the full **FISHING SEASON TABLE** near the start of the calendar	!	!	!	!	!	–	!	–	–	–	–

! LIMITED HARVEST
15/day 11 in. minimum fork length

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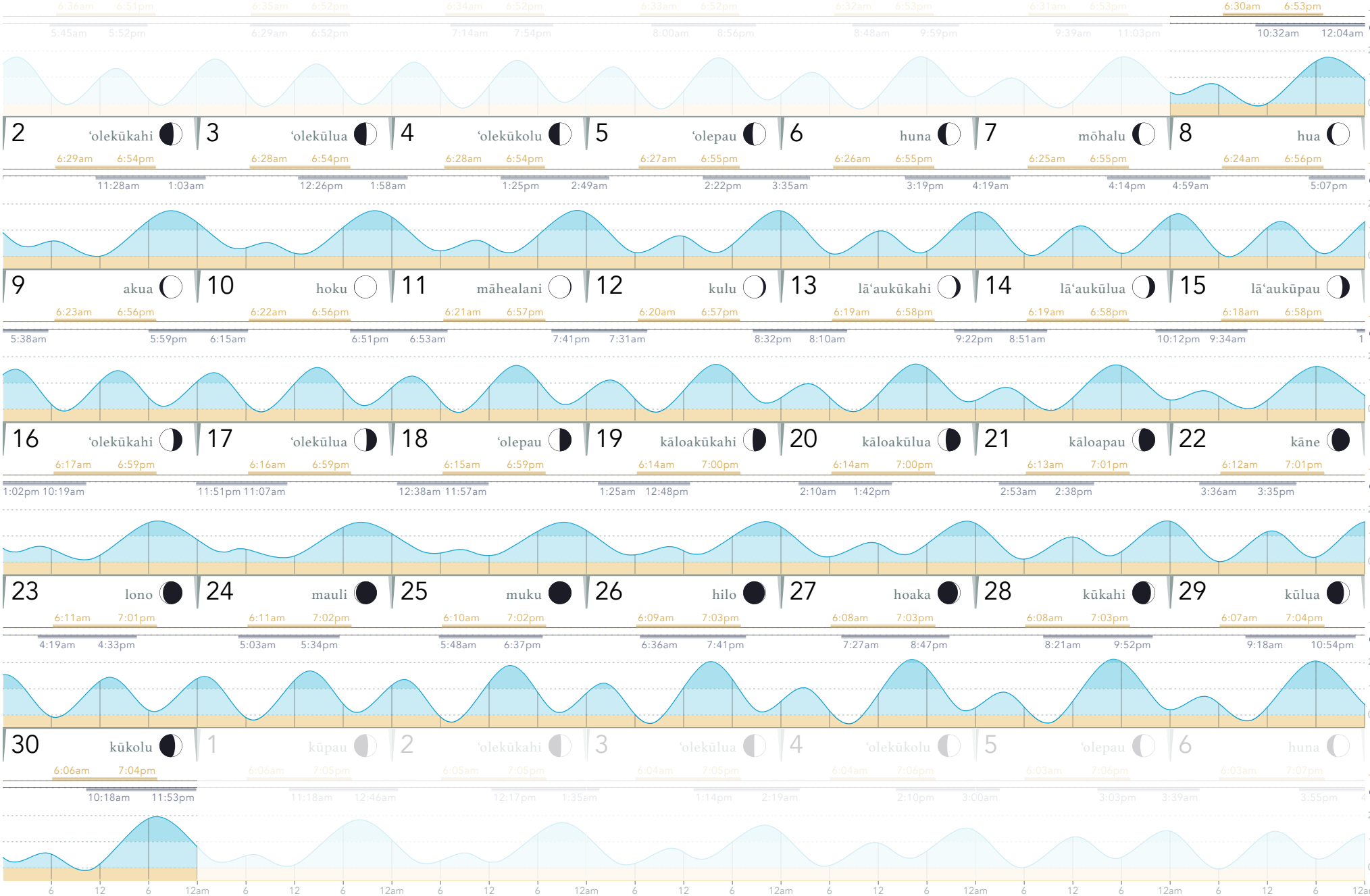
APRIL

lāpule SUNDAY	pōʻakahi MONDAY	pōʻalua TUESDAY	pōʻakolu WEDNESDAY	pōʻahā THURSDAY	pōʻalima FRIDAY	pōʻaono SATURDAY
26 mauli	27 hilo	28 hoaka	29 kūkahi	30 kūlua	31 kūkolu	1 kūpau
6:36am 6:51pm 5:45am 5:52pm	6:35am 6:52pm 6:29am 6:52pm	6:34am 6:52pm 7:14am 7:54pm	6:33am 6:52pm 8:00am 8:56pm	6:32am 6:53pm 8:48am 9:59pm	6:31am 6:53pm 9:39am 11:03pm	6:30am 6:53pm 10:32am 12:04am
2 ʻolekūkahi	3 ʻolekūlua	4 ʻolekūkolu	5 ʻolepau	6 huna	7 mōhalu	8 hua
6:29am 6:54pm 11:28am 1:03am	6:28am 6:54pm 12:26pm 1:58am	6:28am 6:54pm 1:25pm 2:49am	6:27am 6:55pm 2:22pm 3:35am	6:26am 6:55pm 3:19pm 4:19am	6:25am 6:55pm 4:14pm 4:59am	6:24am 6:56pm 5:07pm
9 akua	10 hoku	11 māhealani	12 kulu	13 lāʻaukūkahi	14 lāʻaukūlua	15 lāʻaukūpau
6:23am 6:56pm 5:38am 5:59pm	6:22am 6:56pm 6:15am 6:51pm	6:21am 6:57pm 6:53am 7:41pm	6:20am 6:57pm 7:31am 8:32pm	6:19am 6:58pm 8:10am 9:22pm	6:19am 6:58pm 8:51am 10:12pm	6:18am 6:58pm 9:34am 1
16 ʻolekūkahi	17 ʻolekūlua	18 ʻolepau	19 kāloakūkahi	20 kāloakūlua	21 kāloapau	22 kāne
6:17am 6:59pm 1:02pm 10:19am	6:16am 6:59pm 11:51pm 11:07am	6:15am 6:59pm 12:38am 11:57am	6:14am 7:00pm 1:25am 12:48pm	6:14am 7:00pm 2:10am 1:42pm	6:13am 7:01pm 2:53am 2:38pm	6:12am 7:01pm 3:36am 3:35pm
23 lono	24 mauli	25 muku	26 hilo	27 hoaka	28 kūkahi	29 kūlua
6:11am 7:01pm 4:19am 4:33pm	6:11am 7:02pm 5:03am 5:34pm	6:10am 7:02pm 5:48am 6:37pm	6:09am 7:03pm 6:36am 7:41pm	6:08am 7:03pm 7:27am 8:47pm	6:08am 7:03pm 8:21am 9:52pm	6:07am 7:04pm 9:18am 10:54pm
30 kūkolu	1 kūpau	2 ʻolekūkahi	3 ʻolekūlua	4 ʻolekūkolu	5 ʻolepau	6 huna
6:06am 7:04pm 10:18am 11:53pm	6:06am 7:05pm 11:18am 12:46am	6:05am 7:05pm 12:17pm 1:35am	6:04am 7:05pm 1:14pm 2:19am	6:04am 7:06pm 2:10pm 3:00am	6:03am 7:06pm 3:03pm 3:39am	6:03am 7:07pm 3:55pm 4



LIVING PONO

Our actions on land affect the health of our reefs and ocean. Learn more on how you can be a good steward of the Hanalei watershed at: www.hanaleiwatershedhui.org/tags/watershed-management-plan

WANT TO GET INVOLVED?

Community volunteer workdays are held every 4th Saturday of the month at Waipā.

For more information and to RSVP, call 826-9969.

Waipā Stream Restoration Project

After several years of community-based restoration work along Waipā Stream we have seen a dramatic transformation in the stream and streamside areas including improved habitat and fish passage conditions for several native aquatic species.

Building off this successful effort, the Waipā Foundation is now ramping up restoration efforts to the watershed scale by implementing several best management practices throughout the ahupua'a. These include cesspool replacements, livestock fencing, feral ungulate removal, and erosion control and forest revegetation amongst others. By taking a holistic approach to watershed management the Waipā Foundation is actively working with the community to improve water quality and aquatic habitat conditions in the ahupua'a of Waipā and Hanalei Bay.

MAY	ʻĀholehole	Manini	ʻŌmilu	ʻŌpelu	Akule	Halalū	Moi	Ula	Ula Papapa	Kona Crab	ʻAmaʻama
For more info see the full **FISHING SEASON TABLE** near the start of the calendar	–	!	!	!	!	–	!	✗	✗	✗	–

LIMITED HARVEST
15/day 11 in. minimum fork length

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MAY

lāpule SUNDAY	pōʻakahi MONDAY	pōʻalua TUESDAY	pōʻakolu WEDNESDAY	pōʻahā THURSDAY	pōʻalima FRIDAY	pōʻaono SATURDAY
30 kūkolu	1 kūpau	2 ʻolekūkahi	3 ʻolekūlua	4 ʻolekūkolu	5 ʻolepau	6 huna
6:06am 7:04pm 10:18am 11:53pm	6:06am 7:05pm 11:18am 12:46am	6:05am 7:05pm 12:17pm 1:35am	6:04am 7:05pm 1:14pm 2:19am	6:04am 7:06pm 2:10pm 3:00am	6:03am 7:06pm 3:03pm 3:39am	6:03am 7:07pm 3:55pm 4
7 mōhalu	8 hua	9 akua	10 hoku	11 māhealani	12 kulu	13 lāʻaukūkahi
6:02am 7:07pm :16am 4:46pm	6:02am 7:08pm 4:53am 5:37pm	6:01am 7:08pm 5:30am 6:27pm	6:00am 7:09pm 6:09am 7:17pm	6:00am 7:09pm 6:49am 8:08pm	6:00am 7:09pm 7:31am 8:57pm	5:59am 7:10pm 8:15am 9:4
14 lāʻaukūlua	15 lāʻaukūpau	16 ʻolekūkahi	17 ʻolekūlua	18 ʻolepau	19 kāloakūkahi	20 kāloakūlua
5:59am 7:10pm 7pm 9:02am	5:58am 7:11pm 10:35pm 9:51am	5:58am 7:11pm 11:21pm 10:41am	5:57am 7:12pm 12:06am 11:34am	5:57am 7:12pm 12:49am 12:27pm	5:57am 7:13pm 1:31am 1:22pm	5:56am 7:13pm 2:13am 2:18pm
21 kāloapau	22 kāne	23 lono	24 mauli	25 muku	26 hilo	27 hoaka
5:56am 7:13pm 2:54am 3:16pm	5:56am 7:14pm 3:37am 4:16pm	5:55am 7:14pm 4:23am 5:19pm	5:55am 7:15pm 5:11am 6:25pm	5:55am 7:15pm 6:04am 7:31pm	5:55am 7:16pm 7:01am 8:37pm	5:54am 7:16pm 8:02am 9:39pm
28 kūkahi	29 kūlua	30 kūkolu	31 kūpau	1 ʻolekūkahi	2 ʻolekūlua	3 ʻolekūkolu
5:54am 7:17pm 9:04am 10:37pm	5:54am 7:17pm 10:06am 11:30pm	5:54am 7:17pm 11:06am 12:17am	5:54am 7:18pm 12:04pm 1:00am	5:54am 7:18pm 12:59pm 1:40am	5:54am 7:19pm 1:52pm 2:18am	5:54am 7:19pm 2:43pm 2:5

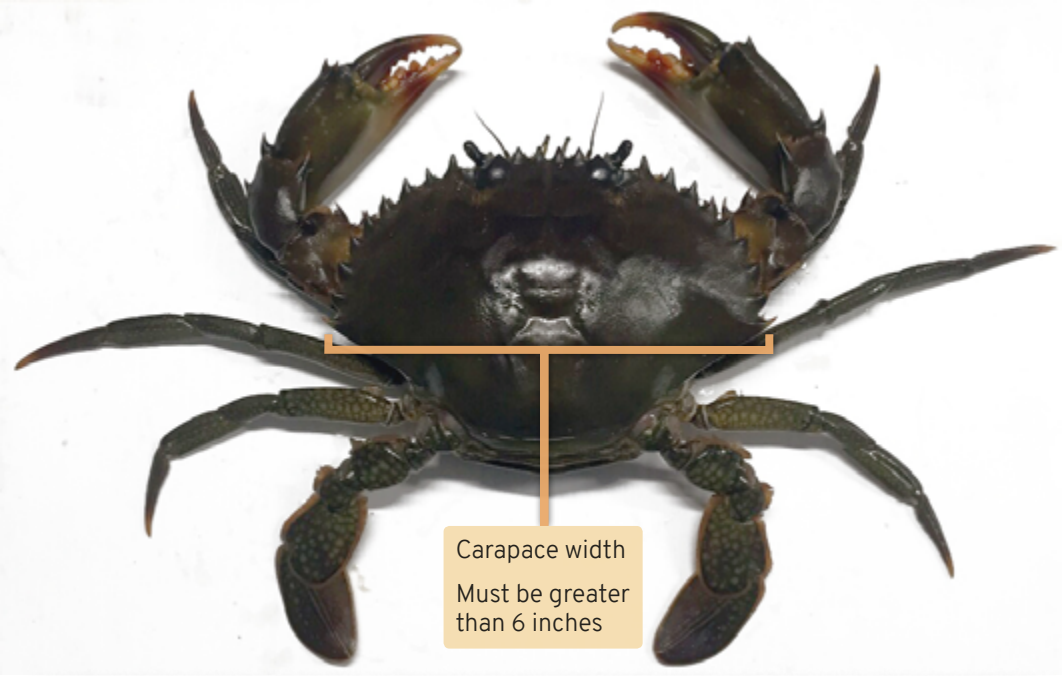
2 ft
1 ft
0 ft

6 12 6 12am 6 12 6 12am 6 12 6 12am 6 12 6 12am 6 12 6 12am 6 12 6 12am 6 12 6 12am

Determing the Gender of Crabs

Pictures show how to identify male and female Samoan crabs.

Samoan crab harvest regulations:
- Minimum size: 6 inches
- No spearing



FEMALE
rounded abdomen

MALE
V-shaped abdomen

CRAB PHOTOS BY: Domingo Norial Jr.

HARVEST PONO

Female crabs are illegal to harvest. Learning how to identify male crabs from females and developing females can help to prevent accidental harvesting of female crabs.

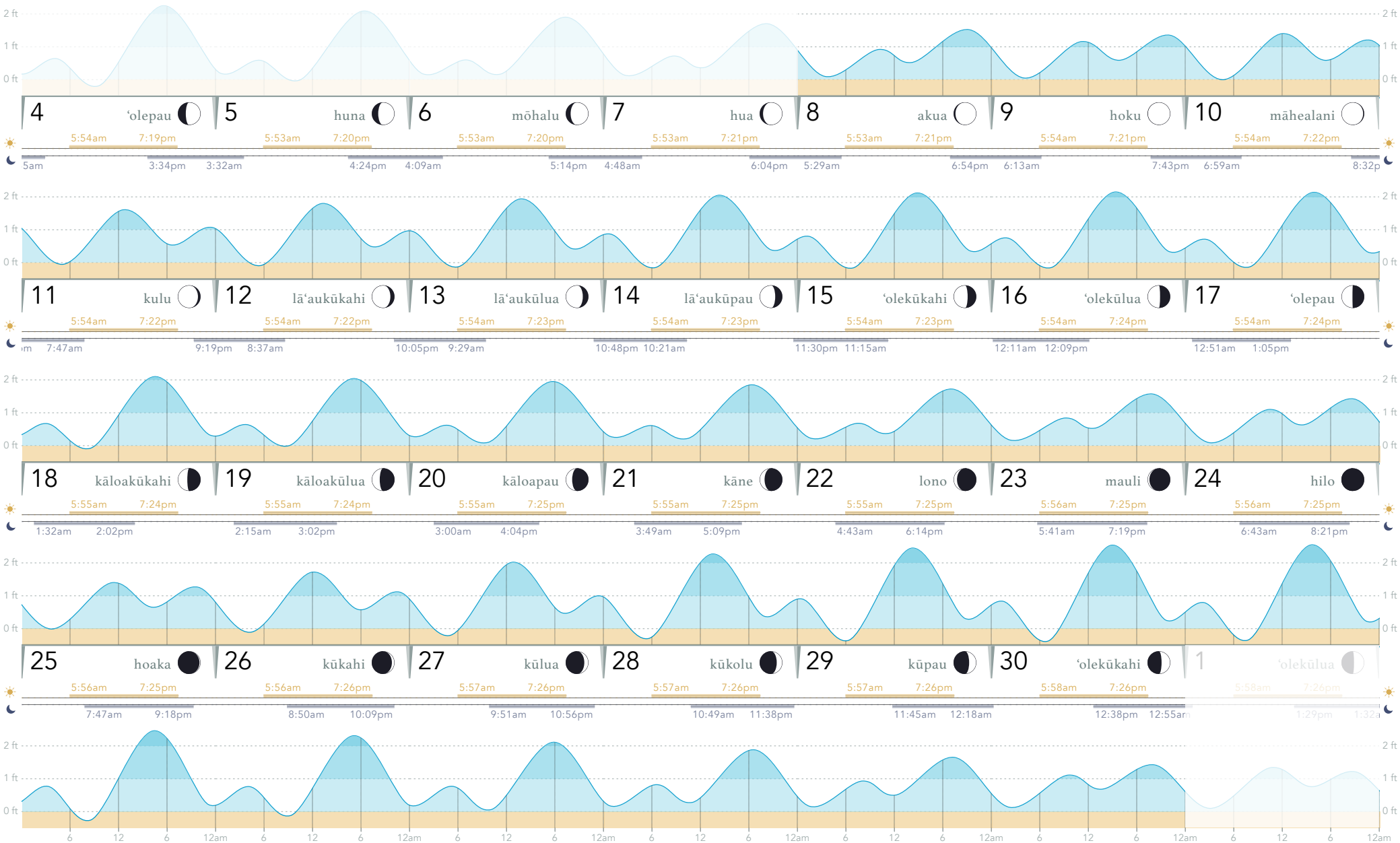
JUNE	ʻĀholehole	Manini	ʻŌmilu	ʻŌpelu	Akule	Halalū	Moi	Ula	Ula Papapa	Kona Crab	ʻAmaʻama
For more info see the full **FISHING SEASON TABLE** near the start of the calendar	–	!	!	!	!	–	✗	✗	✗	✗	–

iune

hanalei
MOON + TIDE CALENDAR
2 0 1 7

JUNE

lāpule SUNDAY	pōʻakahi MONDAY	pōʻalua TUESDAY	pōʻakolu WEDNESDAY	pōʻahā THURSDAY	pōʻalima FRIDAY	pōʻaono SATURDAY
28 kūkahi	29 kūlua	30 kūkolu	31 kūpau	1 ʻolekūkahi	2 ʻolekūlua	3 ʻolekūkolu
5:54am 7:17pm	5:54am 7:17pm	5:54am 7:17pm	5:54am 7:18pm	5:54am 7:18pm	5:54am 7:19pm	5:54am 7:19pm
9:04am 10:37pm	10:06am 11:30pm	11:06am 12:17am	12:04pm 1:00am	12:59pm 1:40am	1:52pm 2:18am	2:43pm 2:5
4 ʻolepau	5 huna	6 mōhalu	7 hua	8 akua	9 hoku	10 māhealani
5:54am 7:19pm	5:53am 7:20pm	5:53am 7:20pm	5:53am 7:21pm	5:53am 7:21pm	5:54am 7:21pm	5:54am 7:22pm
5am 3:34pm	3:32am 4:24pm	4:09am 5:14pm	4:48am 6:04pm	5:29am 6:54pm	6:13am 7:43pm	6:59am 8:32p
11 kulu	12 lāʻaukūkahi	13 lāʻaukūlua	14 lāʻaukūpau	15 ʻolekūkahi	16 ʻolekūlua	17 ʻolepau
5:54am 7:22pm	5:54am 7:22pm	5:54am 7:23pm	5:54am 7:23pm	5:54am 7:23pm	5:54am 7:24pm	5:54am 7:24pm
m 7:47am	9:19pm 8:37am	10:05pm 9:29am	10:48pm 10:21am	11:30pm 11:15am	12:11am 12:09pm	12:51am 1:05pm
18 kāloakūkahi	19 kāloakūlua	20 kāloapau	21 kāne	22 lono	23 mauli	24 hilo
5:55am 7:24pm	5:55am 7:24pm	5:55am 7:25pm	5:55am 7:25pm	5:55am 7:25pm	5:56am 7:25pm	5:56am 7:25pm
1:32am 2:02pm	2:15am 3:02pm	3:00am 4:04pm	3:49am 5:09pm	4:43am 6:14pm	5:41am 7:19pm	6:43am 8:21pm
25 hoaka	26 kūkahi	27 kūlua	28 kūkolu	29 kūpau	30 ʻolekūkahi	1 ʻolekūlua
5:56am 7:25pm	5:56am 7:26pm	5:57am 7:26pm	5:57am 7:26pm	5:57am 7:26pm	5:58am 7:26pm	5:58am 7:26pm
7:47am 9:18pm	8:50am 10:09pm	9:51am 10:56pm	10:49am 11:38pm	11:45am 12:18am	12:38pm 12:55ar	1:29pm 1:32a



Climate Change

Changing climate is an increasing threat to our fisheries. In 2014 corals in Hanalei Bay bleached due to higher than normal ocean temperatures, but this is just one impact. Other impacts that we can expect to see from changing climate are:

- Ocean acidification which can weaken corals and other calcifying organisms
- Changes in spawning times of species due to varying ocean temperatures, circulation, and climate
- Range of species may shift as environmental conditions change

Impacts range from things that we can currently observe to things that we predict will happen. It is important for us to be aware of these potential impacts and keep observing our fisheries.

LIVING PONO

One of the greatest contributors to our changing climate is excessive carbon emissions created by humans. While this seems like a tremendous issue, we can make a difference by making changes to our lifesytle to decrease carbon dioxide production.

Take this test to see your carbon footprint: www.nature.org/greenliving/carboncalculator

JULY	ʻĀholehole	Manini	ʻŌmilu	ʻŌpelu	Akule	Halalū	Moi	Ula	Ula Papapa	Kona Crab	ʻAmaʻama
For more info see the full **FISHING SEASON TABLE** near the start of the calendar	–	–	–	!	!	–	✗	✗	✗	✗	–

iulai

hanalei
MOON + TIDE CALENDAR
2017

JULY

lāpule SUNDAY	pōʻakahi MONDAY	pōʻalua TUESDAY	pōʻakolu WEDNESDAY	pōʻahā THURSDAY	pōʻalima FRIDAY	pōʻaono SATURDAY
25 hoaka	26 kūkahi	27 kūlua	28 kūkolu	29 kūpau	30 ʻolekūkahi	1 ʻolekūlua
2 ʻolekūkolu	3 ʻolepau	4 huna	5 mōhalu	6 hua	7 akua	8 hoku
9 māhealani	10 kulu	11 lāʻaukūkahi	12 lāʻaukūlua	13 lāʻaukūpau	14 ʻolekūkahi	15 ʻolekūlua
16 ʻolepau	17 kāloakūkahi	18 kāloakūlua	19 kāloapau	20 kāne	21 lono	22 mauli
23 muku	24 hilo	25 hoaka	26 kūkahi	27 kūlua	28 kūkolu	29 kūpau
30 ʻolekūkahi	31 ʻolekūlua	1 ʻolekūkolu	2 ʻolepau	3 huna	4 mōhalu	5 hua

FISHING PONO

Legal methods of harvesting stream animals is by pole and line, throw net, spear, and crab trap. Lay nets are prohibited.


O'opu Alamo'o

A Mauka to Makai Connection

Oʻopu , ʻōpae, and hīhīwai were once an important source of food throughout the islands. Their unique life cycle provides insight into ways we can care for these animals by protecting their habitat.

Adult oʻopu lay their eggs in the stream and newly hatched larvae are washed downstream and out to sea. After living as ocean plankton for approximately six months, hinana (post-larvae) return and migrate upstream. This cycle is called “amphidromy”. Unlike salmon, oʻopu do not return to the streams where they were born. Some Hawaiian crustaceans and mollusks also have an amphidromous life cycle.


O'opu Nakea

AUGUST	ʻĀholehole	Manini	ʻŌmilu	ʻŌpelu	Akule	Halalū	Moi	Ula	Ula Papapa	Kona Crab	ʻAmaʻama
For more info see the full **FISHING SEASON TABLE** near the start of the calendar	–	–	–	!	!	!	✕	✕	✕	✕	–

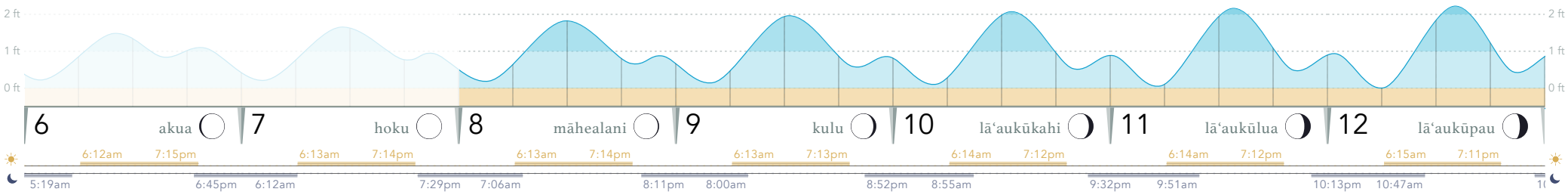
LIMITED HARVEST
State restrictions apply

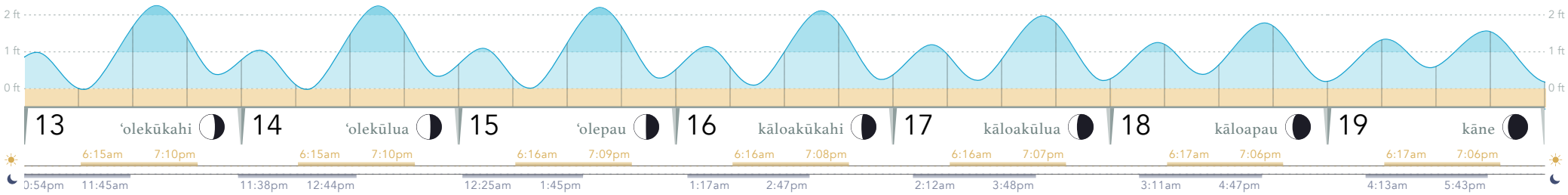
ʻaukake

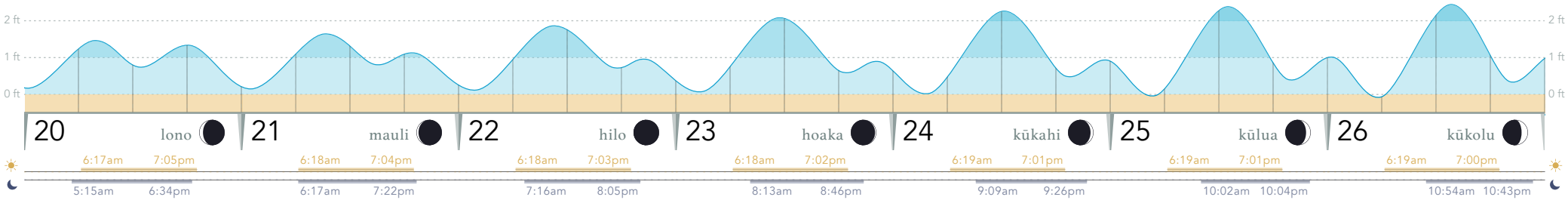
hanalei
MOON + TIDE CALENDAR
2017

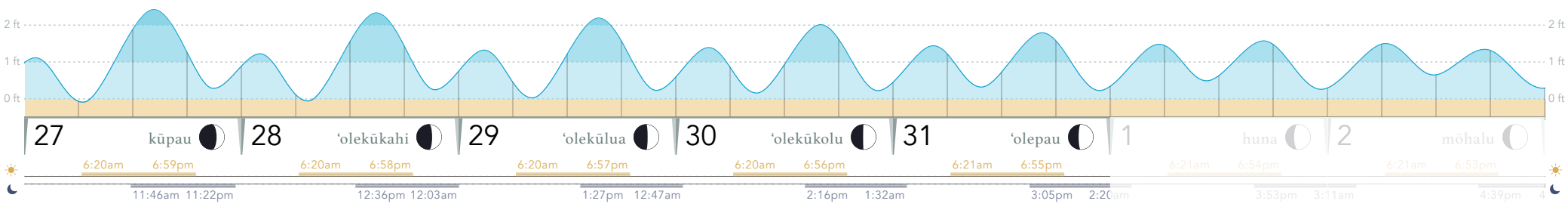
AUGUST

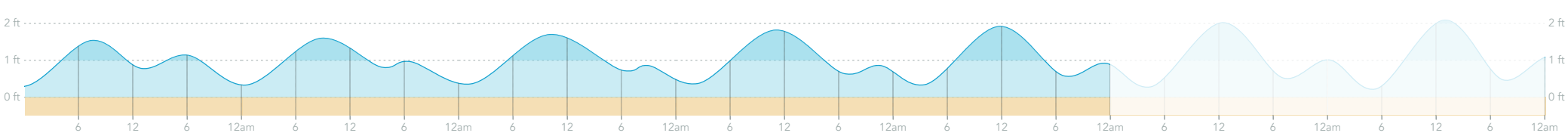
lāpule SUNDAY	pōʻakahi MONDAY	pōʻalua TUESDAY	pōʻakolu WEDNESDAY	pōʻahā THURSDAY	pōʻalima FRIDAY	pōʻaono SATURDAY
30 ʻolekūkahi	31 ʻolekūlua	1 ʻolekūkolu	2 ʻolepau	3 huna	4 mōhalu	5 hua
6:10am 7:19pm 1:03pm 12:47am	6:10am 7:19pm 1:54pm 1:26am	6:10am 7:18pm 2:44pm 2:08am	6:11am 7:17pm 3:34pm 2:52am	6:11am 7:17pm 4:23pm 3:39am	6:12am 7:16pm 5:12pm 4:28am	6:12am 7:16pm 5:59pm
6 akua	7 hoku	8 māhealani	9 kulu	10 lāʻaukūkahi	11 lāʻaukūlua	12 lāʻaukūpau
6:12am 7:15pm 5:19am 6:45pm	6:13am 7:14pm 6:12am 7:29pm	6:13am 7:14pm 7:06am 8:11pm	6:13am 7:13pm 8:00am 8:52pm	6:14am 7:12pm 8:55am 9:32pm	6:14am 7:12pm 9:51am 10:13pm	6:15am 7:11pm 10:47am 1(
13 ʻolekūkahi	14 ʻolekūlua	15 ʻolepau	16 kāloakūkahi	17 kāloakūlua	18 kāloapau	19 kāne
6:15am 7:10pm 0:54pm 11:45am	6:15am 7:10pm 11:38pm 12:44pm	6:16am 7:09pm 12:25am 1:45pm	6:16am 7:08pm 1:17am 2:47pm	6:16am 7:07pm 2:12am 3:48pm	6:17am 7:06pm 3:11am 4:47pm	6:17am 7:06pm 4:13am 5:43pm
20 lono	21 mauli	22 hilo	23 hoaka	24 kūkahi	25 kūlua	26 kūkolu
6:17am 7:05pm 5:15am 6:34pm	6:18am 7:04pm 6:17am 7:22pm	6:18am 7:03pm 7:16am 8:05pm	6:18am 7:02pm 8:13am 8:46pm	6:19am 7:01pm 9:09am 9:26pm	6:19am 7:01pm 10:02am 10:04pm	6:19am 7:00pm 10:54am 10:43pm
27 kūpau	28 ʻolekūkahi	29 ʻolekūlua	30 ʻolekūkolu	31 ʻolepau	1 huna	2 mōhalu
6:20am 6:59pm 11:46am 11:22pm	6:20am 6:58pm 12:36pm 12:03am	6:20am 6:57pm 1:27pm 12:47am	6:20am 6:56pm 2:16pm 1:32am	6:21am 6:55pm 3:05pm 2:2(	6:21am 6:54pm 3:53pm 3:11am	6:21am 6:53pm 4:39pm 4









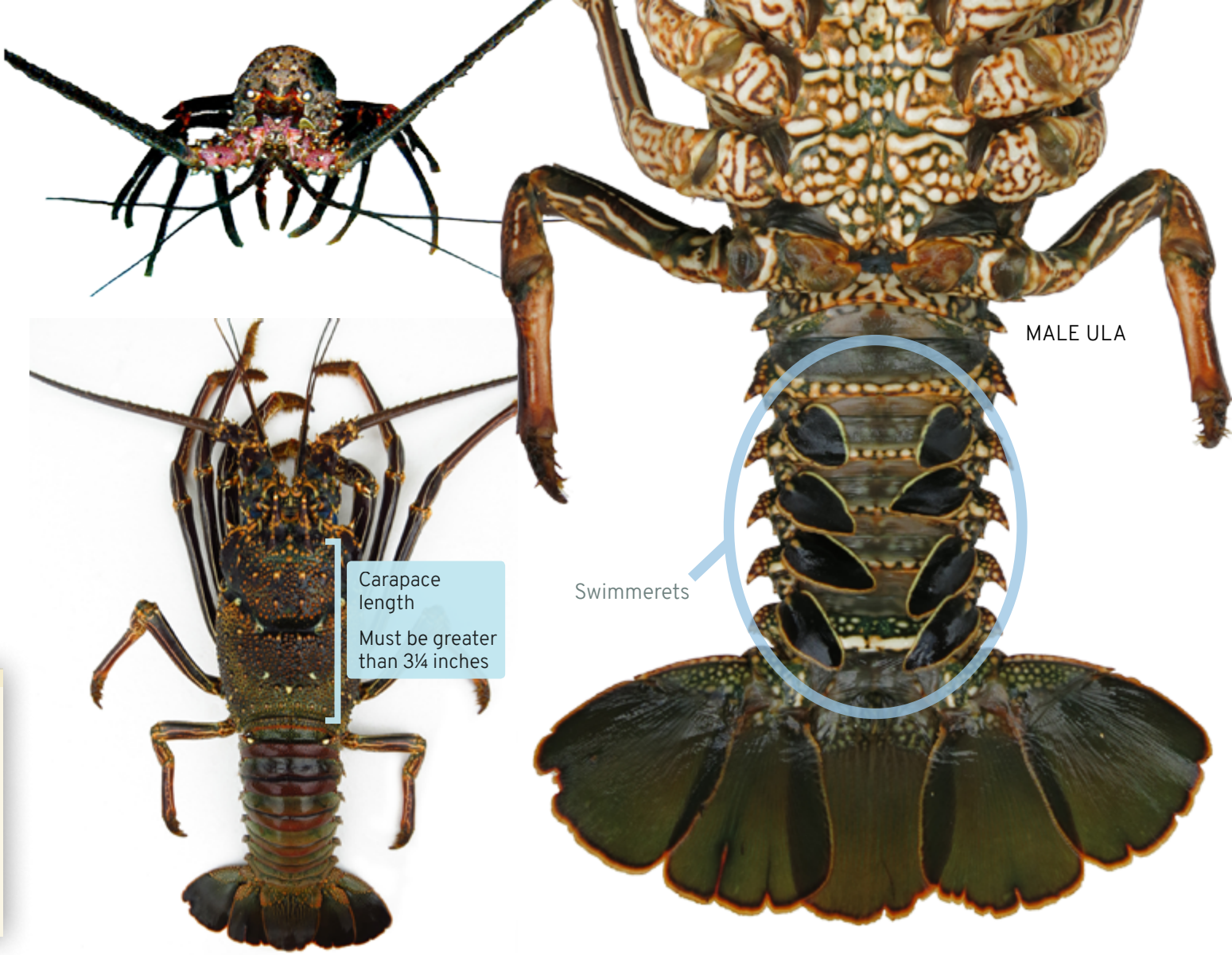


Ula

Only male ula greater than 3¼ inches in carapace length are legal to harvest from September thru April. Here's how to identify males from females:

Female lobsters carry eggs in their swimmerets during spawning season. It can be hard to tell if a lobster is male or female from the top, so that's why spearing is illegal.

Harvesting females is **prohibited**.
Using a spear to harvest is **prohibited**.



FISHING PONO

Measure your catch and release females. These regulations are needed because ula are slow-growing animals that are prone to over-harvesting.

More information on determining the sex of lobster as well as various species of crabs can be found at:
dlnr.hawaii.gov/dar/fishing/fishing-regulations/marine-invertebrates/how-to-determine-sex-of-regulated-invertebrates/

SEPTEMBER	ʻĀholehole	Manini	ʻŌmilu	ʻŌpelu	Akule	Halalū	Moi	Ula	Ula Papapa	Kona Crab	ʻAmaʻama
For more info see the full **FISHING SEASON TABLE** near the start of the calendar	–	–	–	–	!	!	!	–	–	–	–

LIMITED HARVEST
State restrictions apply

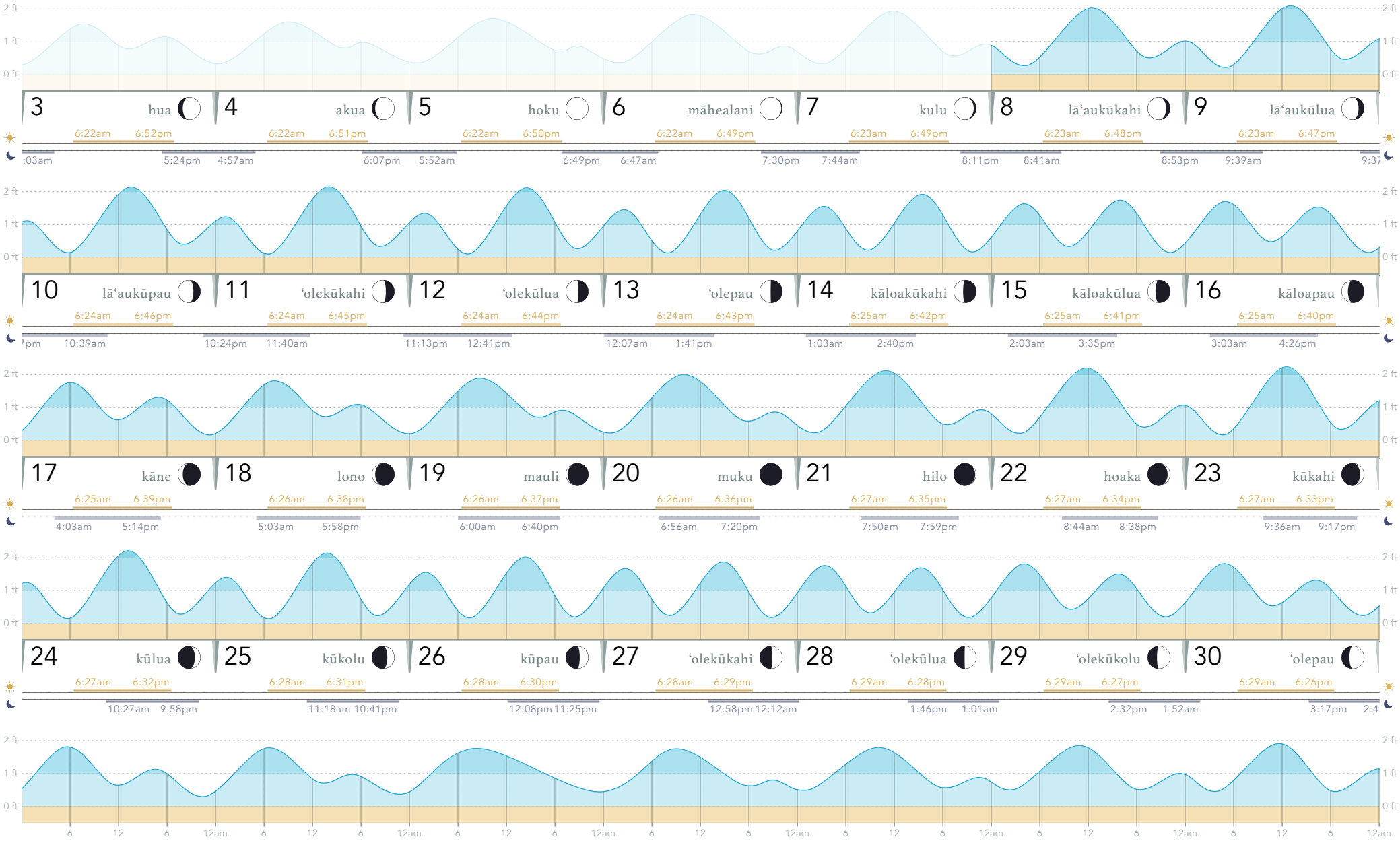
LIMITED HARVEST
15/day 11 in. minimum fork length

kepakemapa

hanalei
MOON + TIDE CALENDAR
2017

SEPTEMBER

lāpule SUNDAY	pōʻakahi MONDAY	pōʻalua TUESDAY	pōʻakolu WEDNESDAY	pōʻahā THURSDAY	pōʻalima FRIDAY	pōʻaono SATURDAY
27 kūpau	28 ʻolekūkahi	29 ʻolekūlua	30 ʻolekūkolu	31 ʻolepau	1 huna	2 mōhalu
6:20am 6:59pm 11:46am 11:22pm	6:20am 6:58pm 12:36pm 12:03am	6:20am 6:57pm 1:27pm 12:47am	6:20am 6:56pm 2:16pm 1:32am	6:21am 6:55pm 3:05pm 2:2[illegible]am	6:21am 6:54pm 3:53pm 3:11am	6:21am 6:53pm 4:39pm 4
3 hua	4 akua	5 hoku	6 māhealani	7 kulu	8 lāʻaukūkahi	9 lāʻaukūlua
6:22am 6:52pm :03am 5:24pm	6:22am 6:51pm 4:57am 6:07pm	6:22am 6:50pm 5:52am 6:49pm	6:22am 6:49pm 6:47am 7:30pm	6:23am 6:49pm 7:44am 8:11pm	6:23am 6:48pm 8:41am 8:53pm	6:23am 6:47pm 9:39am 9:37
10 lāʻaukūpau	11 ʻolekūkahi	12 ʻolekūlua	13 ʻolepau	14 kāloakūkahi	15 kāloakūlua	16 kāloapau
6:24am 6:46pm 7pm 10:39am	6:24am 6:45pm 10:24pm 11:40am	6:24am 6:44pm 11:13pm 12:41pm	6:24am 6:43pm 12:07am 1:41pm	6:25am 6:42pm 1:03am 2:40pm	6:25am 6:41pm 2:03am 3:35pm	6:25am 6:40pm 3:03am 4:26pm
17 kāne	18 lono	19 mauli	20 muku	21 hilo	22 hoaka	23 kūkahi
6:25am 6:39pm 4:03am 5:14pm	6:26am 6:38pm 5:03am 5:58pm	6:26am 6:37pm 6:00am 6:40pm	6:26am 6:36pm 6:56am 7:20pm	6:27am 6:35pm 7:50am 7:59pm	6:27am 6:34pm 8:44am 8:38pm	6:27am 6:33pm 9:36am 9:17pm
24 kūlua	25 kūkolu	26 kūpau	27 ʻolekūkahi	28 ʻolekūlua	29 ʻolekūkolu	30 ʻolepau
6:27am 6:32pm 10:27am 9:58pm	6:28am 6:31pm 11:18am 10:41pm	6:28am 6:30pm 12:08pm 11:25pm	6:28am 6:29pm 12:58pm 12:12am	6:29am 6:28pm 1:46pm 1:01am	6:29am 6:27pm 2:32pm 1:52am	6:29am 6:26pm 3:17pm 2:4

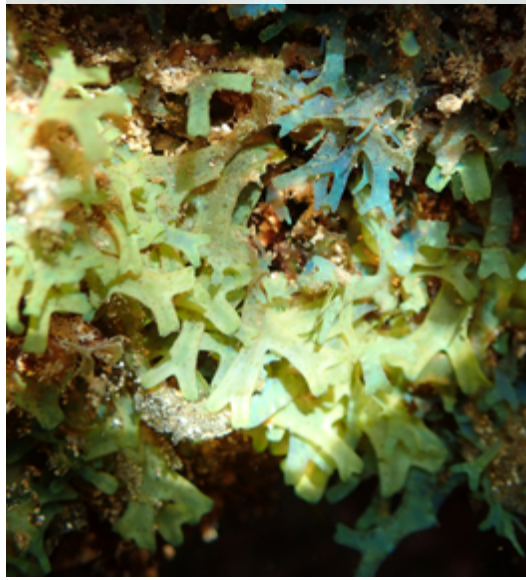


Limu
of Hanalei Bay

Asparagopsis taxiformis

Codium edule

Dictyota spp.



HARVEST PONO

When picking limu, leave the rooted structure called a "holdfast" to regenerate.

Galaxaura spp.

Halimeda spp.

Laurencia spp.

Neomeris annulata

OCTOBER	ʻĀholehole	Manini	ʻŌmilu	ʻŌpelu	Akule	Halalū	Moi	Ula	Ula Papapa	Kona Crab	ʻAmaʻama
	–	–	–	–	!	!	!	–	–	–	–

For more info see the full **FISHING SEASON TABLE** near the start of the calendar

LIMITED HARVEST
State restrictions apply

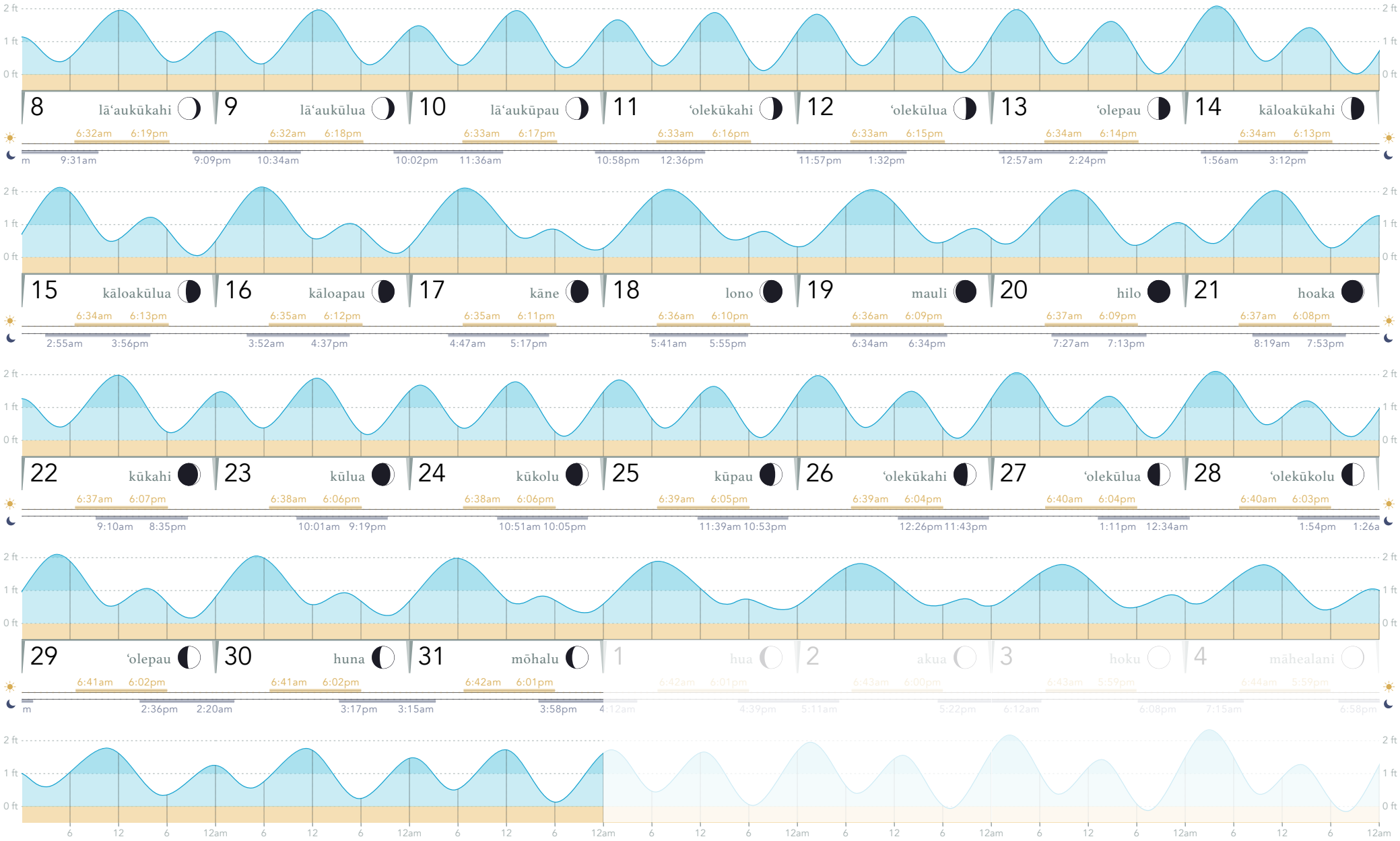
LIMITED HARVEST
15/day 11 in. minimum fork length

ʻokakopa

hanalei
MOON + TIDE CALENDAR
2017

OCTOBER

lāpule SUNDAY	pōʻakahi MONDAY	pōʻalua TUESDAY	pōʻakolu WEDNESDAY	pōʻahā THURSDAY	pōʻalima FRIDAY	pōʻaono SATURDAY
1 huna	2 mōhalu	3 hua	4 akua	5 hoku	6 māhealani	7 kulu
6:30am 6:25pm	6:30am 6:24pm	6:30am 6:23pm	6:31am 6:22pm	6:31am 6:21pm	6:31am 6:20pm	6:32am 6:19pm
5am 4:00pm 3:39am	4:43pm 4:34am	5:24pm 5:31am	6:06pm 6:29am	6:48pm 7:28am	7:32pm 8:29am	8:19p
8 lāʻaukūkahi	9 lāʻaukūlua	10 lāʻaukūpau	11 ʻolekūkahi	12 ʻolekūlua	13 ʻolepau	14 kāloakūkahi
6:32am 6:19pm	6:32am 6:18pm	6:33am 6:17pm	6:33am 6:16pm	6:33am 6:15pm	6:34am 6:14pm	6:34am 6:13pm
m 9:31am	9:09pm 10:34am	10:02pm 11:36am	10:58pm 12:36pm	11:57pm 1:32pm	12:57am 2:24pm	1:56am 3:12pm
15 kāloakūlua	16 kāloapau	17 kāne	18 lono	19 mauli	20 hilo	21 hoaka
6:34am 6:13pm	6:35am 6:12pm	6:35am 6:11pm	6:36am 6:10pm	6:36am 6:09pm	6:37am 6:09pm	6:37am 6:08pm
2:55am 3:56pm	3:52am 4:37pm	4:47am 5:17pm	5:41am 5:55pm	6:34am 6:34pm	7:27am 7:13pm	8:19am 7:53pm
22 kūkahi	23 kūlua	24 kūkolu	25 kūpau	26 ʻolekūkahi	27 ʻolekūlua	28 ʻolekūkolu
6:37am 6:07pm	6:38am 6:06pm	6:38am 6:06pm	6:39am 6:05pm	6:39am 6:04pm	6:40am 6:04pm	6:40am 6:03pm
9:10am 8:35pm	10:01am 9:19pm	10:51am 10:05pm	11:39am 10:53pm	12:26pm 11:43pm	1:11pm 12:34am	1:54pm 1:26a
29 ʻolepau	30 huna	31 mōhalu	1 hua	2 akua	3 hoku	4 māhealani
6:41am 6:02pm	6:41am 6:02pm	6:42am 6:01pm	6:42am 6:01pm	6:43am 6:00pm	6:43am 5:59pm	6:44am 5:59pm
m 2:36pm 2:20am	3:17pm 3:15am	3:58pm 4	12am 4:39pm 5:11am	5:22pm 6:12am	6:08pm 7:15am	6:58pm



Hanalei's Nursery

The mouth of Hanalei River is a physically dynamic habitat for fish. This interface between the ocean and river is constantly changing with the tides, surf, and river conditions. Within any particular spot at the river mouth, conditions can go from marine, to brackish, to nearly fresh water in a matter of seconds. These conditions require the fishes that live in this habitat to be able to osmoregulate quite readily. Also, because of this, fish specie compositions can be quite different within a 100 meter stretch along the stream mouth.

In the low energy environment of the Hanalei River, water is vertically stratified. Higher density saltwater sinks to the bottom and an overlying freshwater layer floats at the surface. In large riverine estuaries such as Hanalei, the saltwater layer can extend more than 3 miles upstream, which explains how marine species can be found far inland.

For stream species that must migrate to the ocean for part of their life history, the freshwater layer is the pathway upstream after spending time in the ocean as plankton.

Recent surveys conducted by the State's Division of Aquatic Resources (DAR) observed juvenile fishes, typically weighing less than 20g (weight of wooden pencil), to dominate the Hanalei River estuary. They've also found the most abundant native species to be juvenile ʻāholehole (*Kuhlia xenura*), and the most abundant introduced species being kanda mullet (*Moolgarda engeli*) and black-chin tilapia (*Sarotherodon melanotheron*).

Juvenile To'au

Juvenile ʻŌmilu

Black-chin tilapia

FISHING PONO

Preserving estuaries as a nursery for juvenile fish is often over looked as a way to care for our reef fish stocks, so tread lightly in these areas.

NOVEMBER	ʻĀholehole	Manini	ʻŌmilu	ʻŌpelu	Akule	Halalū	Moi	Ula	Ula Papapa	Kona Crab	ʻAmaʻama
	–	–	–	–	–	–	1	–	–	–	–

For more info see the full **FISHING SEASON TABLE** near the start of the calendar

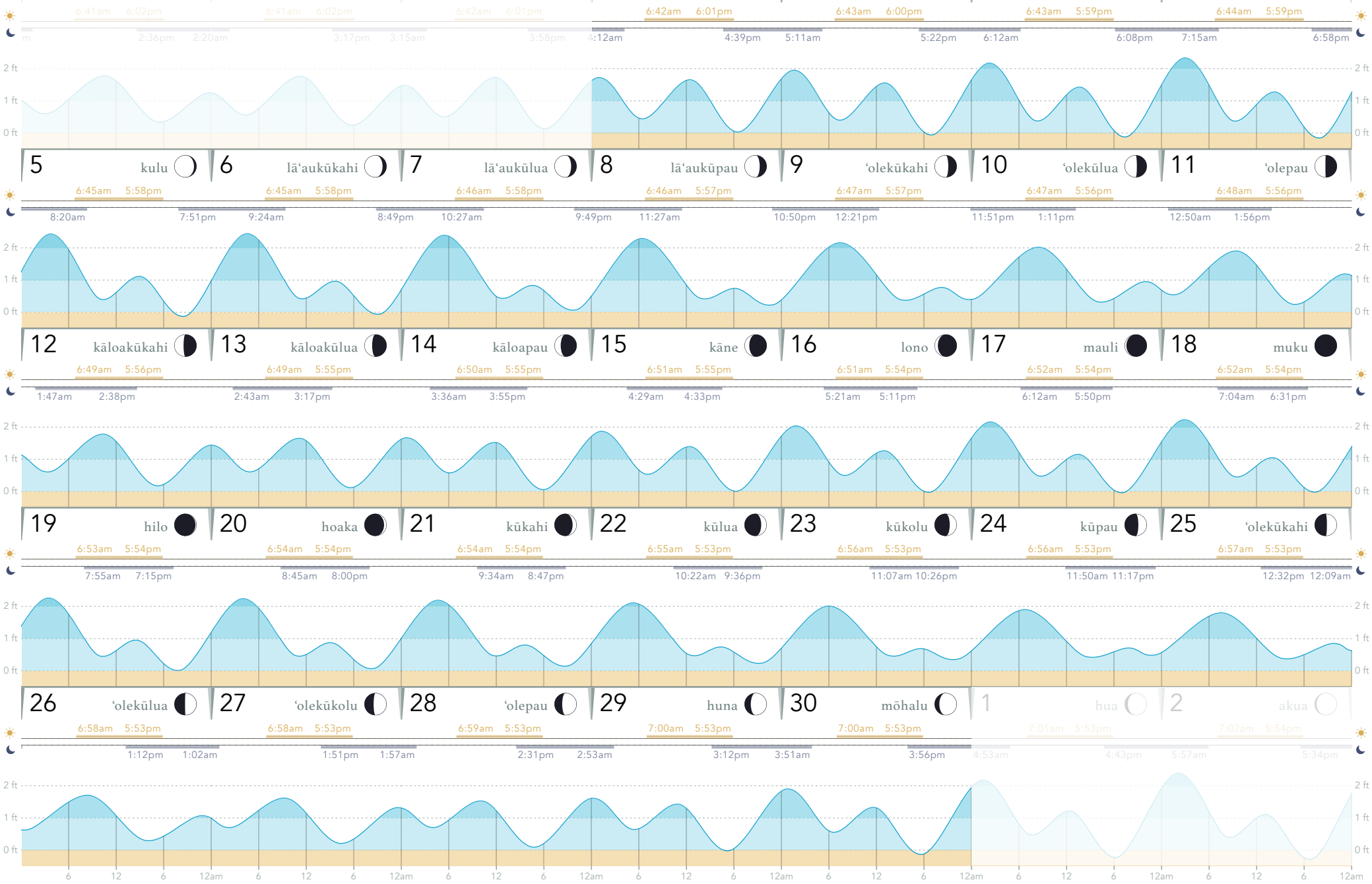
1 LIMITED HARVEST
15/day 11 in. minimum fork length

nowemapa

hanalei
MOON + TIDE CALENDAR
2017

NOVEMBER

lāpule SUNDAY	pōʻakahi MONDAY	pōʻalua TUESDAY	pōʻakolu WEDNESDAY	pōʻahā THURSDAY	pōʻalima FRIDAY	pōʻaono SATURDAY
29 ʻolepau	30 huna	31 mōhalu	1 hua	2 akua	3 hoku	4 māhealani
5 kulu	6 lāʻaukūkahi	7 lāʻaukūlua	8 lāʻaukūpau	9 ʻolekūkahi	10 ʻolekūlua	11 ʻolepau
12 kāloakūkahi	13 kāloakūlua	14 kāloapau	15 kāne	16 lono	17 mauli	18 muku
19 hilo	20 hoaka	21 kūkahi	22 kūlua	23 kūkolu	24 kūpau	25 ʻolekūkahi
26 ʻolekūlua	27 ʻolekūkolu	28 ʻolepau	29 huna	30 mōhalu	1 hua	2 akua

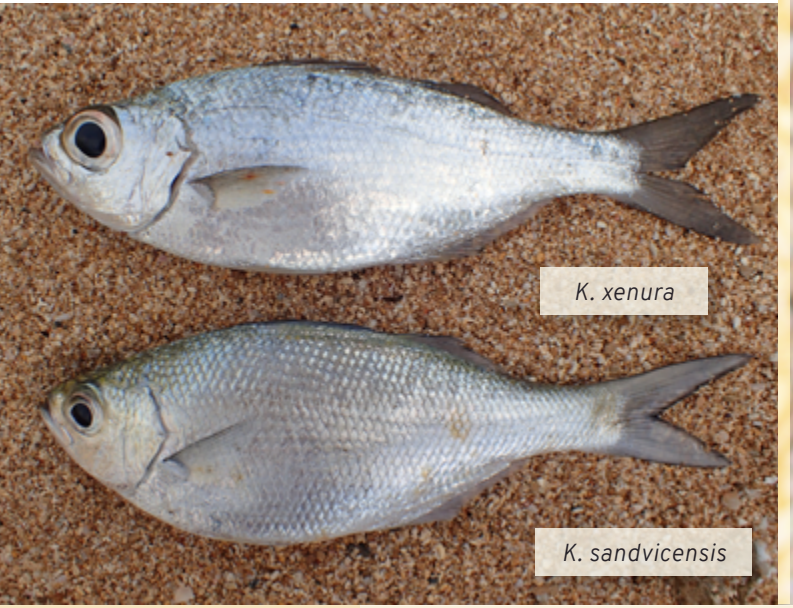


All About ʻĀholehole

There are two species of ʻāholehole in Hawaiʻi, the Reticulated Flagtail (*Kuhlia sandvicensis*) and the Hawaiian Flagtail (*Kuhlia xenura*). Both are referred to as ʻāholehole, reach a fork length of 11 inches, and feed primarily at night on planktonic crustaceans.

In the moku of Haleleʻa the Hawaiian Flagtail is found in the lower parts of all streams, rivers, estuaries, and within Hanalei bay. Reticulated Flagtails can be found mixed in with Hawaiian Flagtail schools but are not as abundant as their endemic cousin.

Data collected on Hawaiian Flagtails in Hanalei show they spawn approximately January thru April while data on Reticulated Flagtails still needs to be collected.



HARVEST PONO

Larger fish in most species produce more eggs than fish that have just reached their reproductive size. These eggs are also much larger, giving the young that hatch a better chance of survival. Choosing not to harvest larger fish can be a good practice for many species.

DECEMBER	ʻĀholehole	Manini	ʻŌmilu	ʻŌpelu	Akule	Halalū	Moi	Ula	Ula Papapa	Kona Crab	ʻAmaʻama
	–	–	–	–	–	–	15	–	–	–	✕

For more info see the full **FISHING SEASON TABLE** near the start of the calendar

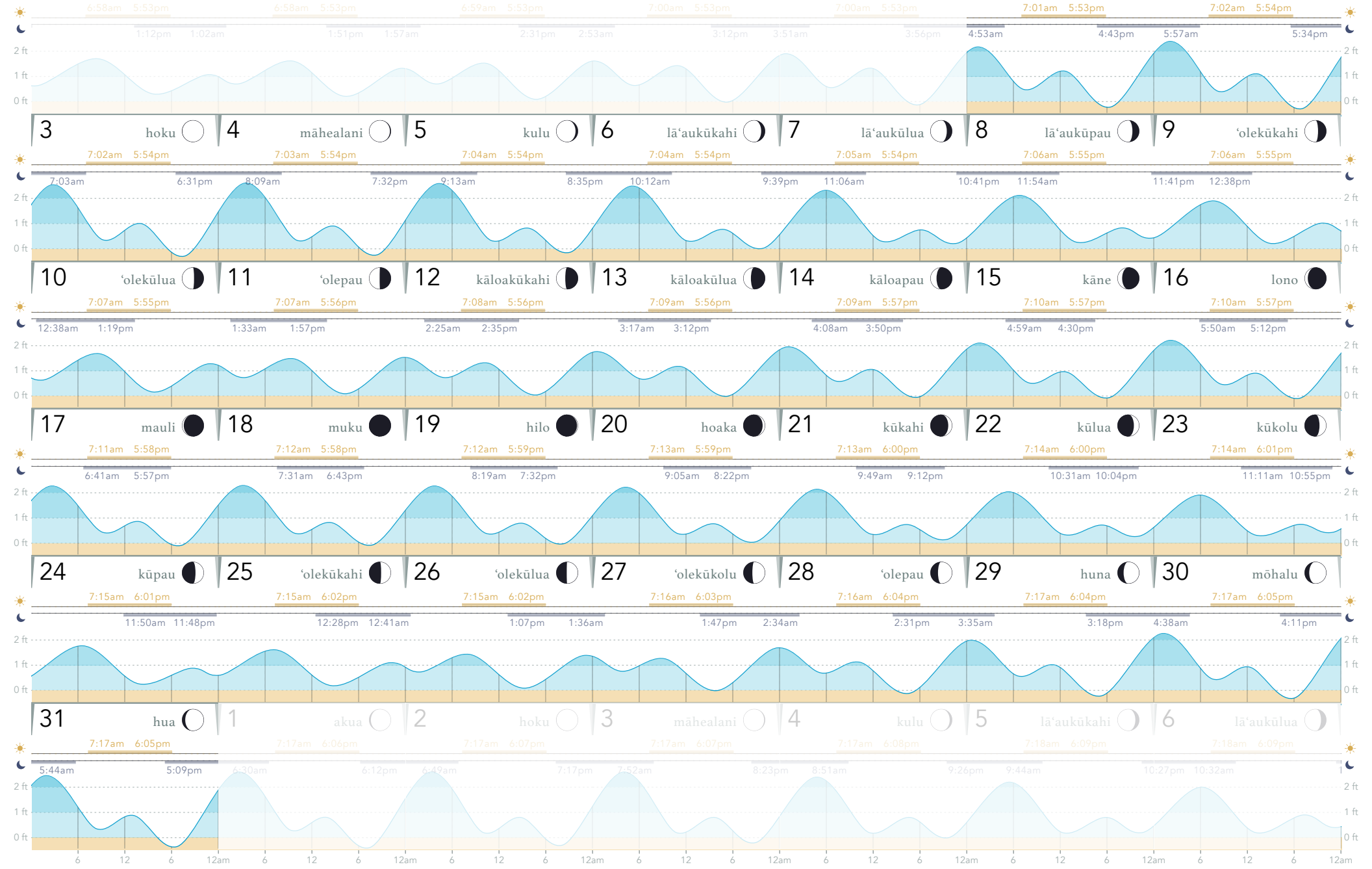
LIMITED HARVEST
15/day 11 in. minimum fork length

kekemapa

hanalei
MOON + TIDE CALENDAR
2017

DECEMBER

lāpule SUNDAY	pōʻakahi MONDAY	pōʻalua TUESDAY	pōʻakolu WEDNESDAY	pōʻahā THURSDAY	pōʻalima FRIDAY	pōʻaono SATURDAY
26 ʻolekūlua	27 ʻolekūkolu	28 ʻolepau	29 huna	30 mōhalu	1 hua	2 akua
3 hoku	4 māhealani	5 kulu	6 lāʻaukūkahi	7 lāʻaukūlua	8 lāʻaukūpau	9 ʻolekūkahi
10 ʻolekūlua	11 ʻolepau	12 kāloakūkahi	13 kāloakūlua	14 kāloapau	15 kāne	16 lono
17 mauli	18 muku	19 hilo	20 hoaka	21 kūkahi	22 kūlua	23 kūkolu
24 kūpau	25 ʻolekūkahi	26 ʻolekūlua	27 ʻolekūkolu	28 ʻolepau	29 huna	30 mōhalu
31 hua	1 akua	2 hoku	3 māhealani	4 kulu	5 lāʻaukūkahi	6 lāʻaukūlua



If you are interested in learning how you can contribute to this and other projects in Hanalei, please contact the Hanalei Watershed Hui at:

(808) 826-1985 or hanaleiriver@hawaiian.net

The Hanalei Moon and Tide Calendar was made possible through the following partnerships:

Hanalei Watershed Hui

Papahānaumokuākea Marine National Monument

Hawaiian Islands Humpback Whale National Marine Sanctuary

Hawai'i Division of Aquatic Resources

Waipā Foundation

U.S. Fish and Wildlife Service

Dr. Alan Friedlander, University of Hawai'i at Mānoa

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Papahānaumokuākea Marine National Monument

WAIPĀ

Hawaiian Islands Humpback Whale National Marine Sanctuary

U.S. Fish & Wildlife Service

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